



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,320	04/09/2007	Klaus Wanninger	P-1298	1842
68/072 7590 01/21/2009				
SCOTT R. COX				
LYNCH, COX, GILMAN & MAHAN, P.S.C.				
500 WEST JEFFERSON STREET				
SUITE 2100				
LOUISVILLE, KY 40202				
EXAMINER				
HANOR, SERENA L				
ART UNIT		PAPER NUMBER		
1793				
MAIL DATE		DELIVERY MODE		
01/21/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/586,320

Applicant(s)

WANNINGER ET AL.

Examiner

SERENA L. HANOR

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/CI/CD)
Paper No(s)/Mail Date 12/04/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112, 1st

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 3 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

1. Claims 2, 3 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. It is unclear what the first metal and the first support consist of. According to claims 2 and 3, the first metal is not specified, and the first metal support is selected from the group consisting of Groups IB, VIII B, rhenium, and cadmium (claim 2) or cerium oxide and zirconium oxide (claim 3). However, according to Applicants' claim 15, the metal applied to the first coating is selected from the group consisting of Groups IB, VIII B, rhenium, and cadmium.

2. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. It is unclear what the second metal and the second support consist of. According to claims 5 and 6, the second metal is a metal which is able to form a metal carbonyl species on a second support (claim 5), the metal being selected from the group consisting of ruthenium, rhodium, platinum, palladium, rhenium, nickel, iron, cobalt, lead, tin, silver, iridium, gold, copper, manganese, zinc,

zirconium, molybdenum and mixtures thereof (claim 6). Furthermore, claim 7 discloses the second support as being selected from the group consisting of crystalline aluminosilicate, aluminum oxide, cerium oxide, titanium oxide and combinations thereof. However, according to Applicants' claim 15, the second support comprises at least one metal which is able to form a metal carbonyl species.

3. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the application of the second metal to the second metal support. This step is not claimed in any subsequent dependent claims.

Nonstatutory Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 18-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 22, 23 and 31 of copending Application No. 10/508,881. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications claim an apparatus for producing hydrogen.

The copending claims 22, 23 and 31 include further details not disclosed in the instant claims 18-20. However, every aspect of the instant claims 18-20 is disclosed by the copending claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-14 and 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Zartenar et al. (U.S. Patent Application Publication No. 2005/0172553 A1).

The applied reference has a common inventive entity and a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C.

102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Zartenar et al. disclose a joint exothermic catalyst stage comprising:

- a) at least one shift stage for the catalytic conversion of a mixture of hydrogen, carbon monoxide and excess steam (p. 2 [0017], *Applicants' claim 1*), wherein a shift catalyst comprises at least one metal selected from the group consisting of the metals of groups IB and VIIIB and mixtures thereof on a first support comprising a metal oxide comprising zirconium oxide, and at least one transition metal promoter (p. 2 [0022-0023], *Applicants' claims 2-4*);
- b) a fine purification stage downstream of the shift stage for catalytic lowering of the residual carbon monoxide content of conversion products produced in the shift stage by selective methanization, wherein a methanization catalyst comprises at least one metal selected from the group consisting of ruthenium or platinum, which is able to form a metal carbonyl species on a second support titanium oxide (p. 2 [0017] and [0022-0025], *Applicants' claims 1 and 5-7*);
- c) wherein the shift stage and the fine purification stage are configured as a unitary hollow body (p. 3 [0030] and [0033], *Applicants' claim 1*), wherein the hollow body has at least one central flow channel (p. 3 [0030], [0033], and [0038-0039], *Applicants' claims 1 and 13*), a wall space for accommodating the shift catalyst and the methanization catalyst (p. 3 [0037], Figure 1, *Applicants' claim 8*) which has a cross-

sectional thickness of 2-20% of an external diameter of the hollow body (p. 3 [0035], *Applicants' claim 9*), and flow channels parallel to a longitudinal axis of the hollow body (p. 3 [0033], *Applicants' claim 12*) with perforations provided there between are provided in the wall space (p. 3 [0037], Figure 1, *Applicants' claims 10 and 11*); and

d) a flow feed housing on the outside of the hollow body through which a cooling medium flows (p. 4 [0047-0049], *Applicants' claim 14*).

Zartenar et al. disclose an apparatus for producing hydrogen (Figure 1), which comprises:

a) a heated steam reforming stage configured as a hollow body comprising a burner which is arranged centrally in the body (p. 2 [0017-0018], p. 3 [0034], *Applicants' claim 19*) and a reforming a catalyst to convert gaseous or vaporizable hydrocarbons and water into hydrogen, carbon monoxide and further reformer products;

b) at least one indirect heat exchanger provided between the steam reforming stage and the joint exothermic catalyst stage, and water required for steam reforming is passed through it in countercurrent to the gaseous products coming from the exothermic catalyst stage (p. 3 [0040], p. 4 [0046-0049], *Applicants' claim 20*);

c) one (p. 2 [0017], *Applicants' claim 21*) or at least one shift stage downstream of the steam reforming stage for the catalytic conversion of the mixture of hydrogen, carbon monoxide and excess steam leaving the steam reforming stage; and

d) a fine purification stage downstream of the at least one shift stage for the catalytic lowering of the residual carbon monoxide content of the conversion products

by selective methanization, wherein the shift stage and the fine purification stage are configured as a joint exothermic catalyst stage (p. 2 [0017-0018], *Applicants' claim 18*).

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 18 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Chintawar et al. (WO 0066486 A1, using U.S. Patent No. 6,524,550 B1).

Chintawar et al. disclose a joint exothermic catalyst stage comprising:

- a) at least one shift stage for the catalytic conversion of a mixture of hydrogen, carbon monoxide and excess steam (col. 4 lines 56-67, col. 9 lines 10-47, *Applicants' claim 1*), wherein a shift catalyst comprises at least one metal selected from the group consisting of the metals of group VIII B and mixtures thereof (col. 4 lines 56-59, *Applicants' claim 2*) on a first support comprising a metal oxide comprising zirconium oxide (col. 4 lines 59-62, col. 9 lines 48-61, *Applicants' claim 3*, based on claim 15) and at least one transition metal promoter (col. 4 lines 56-59, col. 9 lines 48-61, *Applicants' claim 4*);
- b) a fine purification stage downstream of the shift stage for catalytic lowering of the residual carbon monoxide content of conversion products produced in the shift stage by selective methanization (col. 9 lines 10-47, *Applicants' claim 1*), wherein a methanization catalyst comprises at least one metal selected from the group consisting of ruthenium, rhodium, platinum, palladium, rhenium, nickel, iron, cobalt, lead, tin, silver, iridium, gold, copper, manganese, zinc, zirconium, molybdenum and mixtures thereof, which is able to form a metal carbonyl species on a second support such as titanium oxide (col. 1 lines 28-34, col. 10 line 62-col. 11 line 10, *Applicants' claims 5-7*); and

c) wherein the shift stage and the fine purification stage are configured as a unitary hollow body (col. 12 lines 4-14, *Applicants' claim 1*).

Chintawar et al. disclose an apparatus for producing hydrogen, which comprises:

- a) a heated steam reforming stage and a reforming a catalyst to convert gaseous or vaporizable hydrocarbons and water into hydrogen, carbon monoxide and further reformer products (col. 4 lines 51-56, col. 9 lines 10-47, col. 12 lines 4-14);
- b) one (col. 4 lines 56-67, col. 9 lines 10-47, col. 10 line 62-col. 11 line 4, *Applicants' claim 21*) or at least one shift stage downstream of the steam reforming stage for the catalytic conversion of the mixture of hydrogen, carbon monoxide and excess steam leaving the steam reforming stage; and
- c) a fine purification stage downstream of the at least one shift stage for the catalytic lowering of the residual carbon monoxide content of the conversion products by selective methanization, wherein the shift stage and the fine purification stage are configured as a joint exothermic catalyst stage (col. 9 lines 10-47, col. 10 lines 28-48, col. 10 line 62-col. 11 line 4, col. 12 lines 4-14, *Applicants' claim 18*).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The person having ordinary skill in the art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this application reasonably reflect this level of skill.

1. Claims 1-8, 10, 12, 13 and 15-17 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rudy (U.S. Patent No. 5,010,051).

Rudy discloses a joint exothermic catalyst stage comprising:

- a) at least one shift stage for the catalytic conversion of a mixture of hydrogen, carbon monoxide and excess steam (col. 2 lines 64-68, *Applicants' claim 1*), wherein a shift catalyst comprises at least one metal selected from the group consisting of the metals of group VIIIB and mixtures thereof on a first support comprising a metal oxide comprising cerium oxide, zirconium oxide or a combination thereof, and at least one transition metal promoter (col. 3 lines 27-49, *Applicants' claims 2-4*);
- b) a fine purification stage downstream of the shift stage for catalytic lowering of the residual carbon monoxide content of conversion products produced in the shift stage by selective methanization, wherein a methanization catalyst comprises at least one metal selected from the group consisting of ruthenium, rhodium, platinum, palladium, rhenium, nickel, iron, cobalt, lead, tin, silver, iridium, gold, copper, manganese, zinc, zirconium, molybdenum and mixtures thereof, which is able to form a metal carbonyl species on a second support selected from the group consisting of aluminum oxide, cerium oxide, titanium oxide and combinations thereof (col. 3 lines 27-49, *Applicants' claims 1 and 5-7*); and
- c) wherein the shift stage and the fine purification stage are configured as a unitary hollow body (col. 8 lines 12-55, *Applicants' claim 1*), wherein the hollow body has at least one central flow channel, a wall space for accommodating the shift catalyst and the methanization catalyst, and flow channels parallel to a longitudinal axis of the hollow body are provided in the wall space (col. 7 line 65-col. 8 line 55, *Applicants' claims 8, 10, 12 and 13*).

Rudy discloses a process for producing a joint exothermic catalyst stage comprising the following steps:

- a) providing a hollow body;
- b) dipping the hollow body into a suspension of a first support comprising a metal oxide over a first part of a length of the body;
- c) fixing the first support on the first part of the length of the hollow body so that a first coating is produced;
- d) applying a metal to the first coating, with the metal being selected from the group consisting of the metals of groups IB and VIIB, rhenium and cadmium, and mixtures thereof (col. 3 lines 27-49);
- e) calcining said metal-coated first coating;
- f) applying a second support which comprises at least one metal able to form a metal carbonyl species (col. 3 lines 27-49) to at least a part of the length of the hollow body which is not covered by the first coating; and
- g) calcining after the second support is applied (col. 8 lines 12-55, col. 10-11 Example 2, *Applicants' claims 15-17*).

Rudy discloses mixing the catalyst and the support and then applying it to the structure.

It would have obvious to one of ordinary skill in the art at the time of the invention **to have modified** the process of Rudy by coating the carrier with the support, calcining, coating with the metal, calcining, coating with the second support, and calcining, as per Applicants' claims 15-17, **because** the selection of any order of mixing ingredients and

the selection of any order of performing process steps is *prima facie* obvious. See *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959), *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946), and *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). See MPEP 2144.04 [R-6] IV C.

2. Claims 1-8, 10, 12, 13, 15-18 and 21 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sung et al. (U.S. Patent No. 6,087,298).

Sung et al. disclose a joint exothermic catalyst stage comprising:

- a) at least one shift stage for the catalytic conversion of a mixture of hydrogen, carbon monoxide and excess steam, wherein a shift catalyst comprises at least one metal selected from the group consisting of the metals of groups IB and VIIIB, rhenium and cadmium, and mixtures thereof on a first support comprising a metal oxide comprising cerium oxide, zirconium oxide or a combination thereof, and at least one transition metal promoter (col. 17 line 38-col. 20 line 49, col. 22 lines 60-67, col. 23 lines 27-33, *Applicants' claims 1-4*);
- b) a fine purification stage downstream of the shift stage for catalytic lowering of the residual carbon monoxide content of conversion products produced in the shift stage by selective methanization, wherein a methanization catalyst comprises at least one metal selected from the group consisting of ruthenium, rhodium, platinum, palladium, rhenium, nickel, iron, cobalt, lead, tin, silver, iridium, gold, copper, manganese, zinc, zirconium, molybdenum and mixtures thereof which is able to form a metal carbonyl species on a second support selected from the group consisting of crystalline aluminosilicate,

aluminum oxide, cerium oxide, titanium oxide and combinations thereof (col. 27 lines 4-63, col. 35 lines 21-42, *Applicants' claims 1 and 5-7*); and

c) wherein the shift stage and the fine purification stage are configured as a unitary hollow body (col. 26 lines 4-35, *Applicants' claim 1*), wherein the hollow body has at least one central flow channel, a wall space for accommodating the shift catalyst and the methanization catalyst, and flow channels parallel to a longitudinal axis of the hollow body are provided in the wall space (col. 25 lines 44-65, col. 26 lines 4-35, *Applicants' claims 8, 10, 12 and 13*).

Sung et al. disclose a process for producing a joint exothermic catalyst stage comprising the following steps:

- a) providing a hollow body (col. 25 lines 44-65);
- b) dipping the hollow body into a suspension of a first support comprising a metal oxide over a first part of a length of the body;
- c) fixing the first support on the first part of the length of the hollow body so that a first coating is produced;
- d) applying a metal to the first coating, with the metal being selected from the group consisting of the metals of groups IB and VIIB, rhenium and cadmium, and mixtures thereof;
- e) calcining said metal-coated first coating;
- f) applying a second support which comprises at least one metal able to form a metal carbonyl species to at least a part of the length of the hollow body which is not covered by the first coating; and

g) calcining after the second support is applied (col. 24 line 1-col. 25 line 17, col. 31 line 29-col. 34 line 62, *Applicants' claims 15-17*).

Sung et al. disclose an apparatus for producing hydrogen, which comprises:

- a) a heated steam reforming stage and a reforming a catalyst to convert gaseous or vaporizable hydrocarbons and water into hydrogen, carbon monoxide and further reformer products;
- b) one (col. 17 line 38-col. 20 line 49, *Applicants' claim 21*) or at least one shift stage downstream of the steam reforming stage for the catalytic conversion of the mixture of hydrogen, carbon monoxide and excess steam leaving the steam reforming stage; and
- c) a fine purification stage downstream of the at least one shift stage for the catalytic lowering of the residual carbon monoxide content of the conversion products by selective methanization, wherein the shift stage and the fine purification stage are configured as a joint exothermic catalyst stage (col. 26 lines 4-35, col. 27 lines 4-63, *Applicants' claim 18*).

Sung et al. disclose mixing the catalyst and the support and then applying it to the structure.

It would have obvious to one of ordinary skill in the art at the time of the invention **to have modified** the process of Sung et al. by coating the carrier with the support, calcining, coating with the metal, calcining, coating with the second support, and calcining, as per Applicants' claims 15-17, **because** the selection of any order of mixing ingredients and the selection of any order of performing process steps is *prima facie*

obvious. See *Ex parte Rubin*, 128 USPQ 440 (Bd. App. 1959), *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946), and *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). See MPEP 2144.04 [R-6] IV C.

Conclusion

Claims 1-21 have been rejected.

Claims 9, 11, 14, 19 and 21 have not been rejected under either 35 U.S.C. 102 or 35 U.S.C. 103 because the limitations of these claims are not taught in the reference(s) of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SERENA L. HANOR whose telephone number is (571)270-3593. The examiner can normally be reached on Monday - Thursday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SLH

/Timothy C Vanoy/
Primary Examiner, Art Unit 1793